

due to the high tides. No loss of life is reported, and vessels coming in later, while damaged to some extent as to rigging and sail, rode safely through the storm.

The captain of the steamship *Esperanza* reports that he first encountered the storm in the Gulf Monday, August 12, at 2:30 p. m., with wind 20 to 30 miles, which gradually increased through Tuesday and Wednesday, until a maximum was reached Thursday between 2 and 7 p. m., the barometer falling steadily all the while. The wind was estimated to be between 60 and 70 miles an hour from the southeast. The Gulf was very rough, and waves broke over the funnels. Between the hours of 2 and 7 p. m., Thursday, there was so much spray that it was impossible to see where the boat was going. The captain and the entire crew had remained on watch for three days and nights, and were in an exhausted condition when they reached port Friday morning.

The secretary of the Chamber of Commerce informed me that the amount saved by the warnings could not be estimated, but would aggregate several millions of dollars.

Aside from advices issued in connection with the middle Gulf coast storm, no special forecasts or warnings were required in the United States; neither were hurricane warnings ordered, nor were they needed, in the West Indies.

The forecast center for the west Gulf district was closed at Galveston, Tex., August 5, and opened at New Orleans, La., August 8, 1901.

### AREAS OF HIGH AND LOW PRESSURE.

*Movements of centers of areas of high and low pressure.*

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
<b>High areas.</b>										
I.....	1, a. m.	50	120	6, p. m.	46	80	3,300	5.5	600	25.0
II.....	5, a. m.	51	114	9, p. m.	41	70	3,425	3.5	593	23.9
III.....	9, p. m.	49	104	13, a. m.	48	53	2,750	3.5	786	32.7
IV.....	11, p. m.	45	67	19, p. m.	46	60	825	1.5	550	22.9
V.....	18, a. m.	53	121	22, p. m.	46	60	3,625	6.5	558	23.2
VI.....	17, a. m.	53	121	22, p. m.	46	60	3,625	6.5	550	22.9
VII.....	22, p. m.	54	114	26, a. m.	42	76	2,300	2.5	657	27.3
VIII.....	25, a. m.	50	100	28, p. m.	46	60	2,150	2.5	614	25.6
	28, a. m.	51	114	31, p. m.	49	86	1,425	3.5	407	17.0
Sums.....							21,825	36.5	5,415	235.5
Mean of 9 paths.....							2,425		602	25.1
Mean of 36.5 days.....									598	24.9
<b>Low areas.</b>										
I.....	1, a. m.	44	104	3, a. m.	48	68	2,000	2.0	1,000	41.7
II.....	4, p. m.	51	114	7, a. m.	48	90	1,625	2.5	650	27.1
III.....	4, p. m.	32	100	7, p. m.	48	68	2,375	3.0	791	33.0
IV.....	7, a. m.	44	116	11, a. m.	45	64	2,700	4.0	675	28.2
V.....	9, a. m.	21	78	19, p. m.	42	83	2,275	10.5	217	9.0
VI.....	21, p. m.	35	98	24, a. m.	48	68	1,625	2.5	730	30.4
Sums.....							12,800	24.5	4,063	169.4
Mean of 6 paths.....							2,133		677	28.2
Mean of 24.5 days.....									522	21.8

For graphic presentation of these highs and lows see Charts I and II.—Geo. E. Hunt, Chief Clerk Forecast Division.

### RIVERS AND FLOODS, AUGUST, 1901.

The Mississippi River mean stage was about 3.5 feet lower than during July, 1901, with the greatest fall below the mouth of the Ohio River. The fall was steady throughout the month above Cairo, Ill., but below that place it was interrupted about the middle of the month by heavy rains and for ten days thereafter there was a steady rise, the maximum stages occurring between the 27th and 31st. The maximum stage of 11.4 feet at New Orleans, La., on the 15th, however, was due neither to the rain nor to the rise from the upper river, but to backwater from the high Gulf tide that occurred during the tropical storm in progress at that time.

The Missouri and Ohio rivers presented nothing of special

interest, and both were somewhat lower than during the preceding month.

In the Tennessee, Cumberland, and the rivers of the South Atlantic States, conditions were widely different, the heavy rains of the middle of the month causing flood stages generally, except along the Cumberland where the danger lines were hardly reached. In the Tennessee, danger line stages were general from Chattanooga to the mouth of the river. The following report on the general conditions of the Tennessee River for the month, from the head waters to Bridgeport, Ala., was prepared by Mr. L. M. Pindell, official in charge of the United States Weather Bureau office at Chattanooga, Tenn.

The month opened with the river below the safe navigable stage for large boats and with a continuation of the drought which had prevailed since June 8. On the 5th, light rain was reported over the river system with a slight rise at Clinton, Tenn., and a storm center over the lower Mississippi Valley which moved northeastward to north Georgia, producing heavy rains in front of its center ranging from 0.91 inch at Kingston, Tenn., to 3.24 inches at Rogersville, Tenn. The storm then moved northward along the Atlantic coast with heavy rain over the extreme headwaters. The French Broad and Holston rivers rose rapidly, producing a 10-foot rise at Knoxville, Tenn., by the morning of the 7th and opening navigation at Chattanooga, Tenn. The river then rose to 12.2 feet by 8 a. m. of the 9th and afterwards fell slowly. Light drift was general on the 8th, 9th, and 10th. Rain began on the 10th and continued on the 11th and 12th, but was not very heavy except at Riverton, Ala., where 1.68 inches fell in twenty-four hours ending 8 a. m. of the 11th. On the 13th heavy rain was reported over the Tennessee Valley, the headwaters, and in North Carolina, and continued on the 14th and 15th over the same sections, extending also into South Carolina, Georgia, and Virginia. This heavy rain very probably resulted from the influence of the storm which was centered over the Gulf and which moved northward, east of the Mississippi River from the 14th to 17th, accompanied by heavy rains. The tributaries rose rapidly after the 13th, and on the 15th a rise of 13 feet was reported at Clinton, with the river 1.7 feet above the danger line, 10.5 feet at Kingston, 6.5 feet at Knoxville, and 7.5 feet at Chattanooga. Clinton had a rise of 20.9 feet in forty-eight hours and Kingston 14 feet. On the 16th at 8 a. m. the river at Chattanooga stood at 27.3 feet, showing a rise of 13.3 feet in twenty-four hours.

All the tributaries, and the Tennessee, at Knoxville, were falling at 8 a. m. of the 17th, but still rising slowly at Chattanooga. The water passed the danger line at Chattanooga at 11 a. m. and reached the crest of 33.3 feet between 11 p. m. and 12 m. The reports were all delayed on the 14th, but when received, the following flood warnings were sent to Knoxville and Kingston. To Knoxville: "Additional advices from headquarters indicate rapid rise in river, and it will reach 25 or more feet at Knoxville by Thursday noon." To Kingston: "Heavy rains over headwaters of Clinch; river will rise rapidly, reaching 20 or more feet by to-morrow night (15th); notify river interests." On the 15th when Clinton reported a 13-foot rise the following flood warning was sent to Kingston: "River at Kingston will reach 31 or 33 feet. Heavy rise and rainfall above you." On the 15th the conditions justified a prediction of from 38 to 40 feet at Chattanooga by Saturday morning, but on the afternoon of the 16th the crest was lowered to 36 feet by Saturday noon or evening. The river interests above this city had from thirty-six to forty-eight hours notice, and at and below this city from two to seven days warning. The lower river interests were kept posted by bulletins and telegrams as to the conditions and forecasts. The loss was not as heavy as anticipated owing to prompt measures taken. Considerable damage occurred on the Southern Railway near the Watauga River, also on other roads in that vicinity. The road beds were made soft by the continuous heavy rains and trains ran slow and cautiously. The river bottoms suffered the most; all crops being practically ruined. The drift was heavy from the 15th to the 17th, and consisted of live hogs, dead animals, small buildings, fences, trees, logs, etc. This rise in August was unprecedented, passes all recollection of the oldest inhabitants, and breaks all records as to tide in river and amount of rainfall. During this freshest the heaviest rainfall for the period and for twenty-four hours was at Clinton. From 8 a. m. August 10, to 8 a. m. August 13, or in eight days, the total amount of rainfall at each station in the Tennessee River system was as follows:

	Inches.
Asheville, N. C.....	3.61
Murphy, N. C.....	4.87
Bryson, N. C.....	6.98
Speers Ferry, Va.....	5.47
Tazewell, Tenn.....	8.07
Bluff City, Tenn.....	4.67
Greeneville, Tenn.....	4.58
Rogersville, Tenn.....	4.18
Clinton, Tenn.....	9.80

	Inches.
Knoxville, Tenn.....	6.95
Kingston, Tenn.....	8.85
Charleston, Tenn.....	4.37
Chattanooga, Tenn.....	5.92
Bridgeport, Ala.....	9.90
Florence, Ala.....	6.70
Riverton, Ala.....	7.96

Special 3 p.m. river observations were received from all the river stations, including Charleston, Tenn., on the 15th, 16th, and 17th.

It is estimated that \$100,000 would hardly cover the damage to crops in the lowlands near the Tennessee River between Chattanooga and Florence; the farmers state that the crop left will not yield over an average of a quarter of a bale of cotton to the acre and about eight barrels of corn will be made. The river remained above the danger line two days at Bridgeport and seven days at Florence and Riverton, lasting until the 26th at Florence and one day later at Riverton.

Mr. J. D. Bladgen, Observer temporarily in charge of the United States Weather Bureau office at Cairo, Ill., made the following report on the high water in the lower Tennessee from Florence, Ala., to its mouth:

Heavy rains over the upper Tennessee watershed August 13, 14, 15, and 16 caused the river to rise. At Florence, Ala., the rise began on the 16th and at Johnsonville, Tenn., on the 17th.

The crest stage reached Florence at noon of the 22d and Johnsonville on the 27th. The danger line was exceeded at Florence by 3 feet, and at Johnsonville by 6.6 feet.

Warnings were telegraphed to Florence and Johnsonville on the 17th; on the receipt of the warnings at both places bulletins were posted and all interested were notified by telephone.

All movable property that would be damaged by the water was removed to a place of safety; consequently all the damage done was to growing crops in lowlands; all such crops were destroyed.

The predicted stage at Florence was 18 feet; the stage reached was 19 feet; at Johnsonville, predicted stage, 25 feet; stage reached, 27.6 feet.

Heavy rains occurred over the upper Tennessee watershed after the warnings were sent out, and it is probably from this cause that a higher stage was reached than was at first anticipated.

The floods in the James, Roanoke, and Cape Fear rivers did not assume extensive proportions, although at some places they neared or somewhat exceeded the danger lines. Local warnings were issued for all three rivers, and portable property, liable to damage by overflow, removed to places of safety. Some slight damage was done to growing crops in the bottom lands.

Concerning the floods in the rivers of South Carolina, Mr. L. N. Jesunofsky, official in charge of the United States Weather Bureau office at Charleston, S. C., reported as follows:

There were three distinct flood periods within the streams of South Carolina during August, 1901, as follows: 7th to 10th, 15th to 20th, and 24th to 30th. Excessive rainfall of 3.50 to 4.50 inches over the catchment basins of the Wateree, Pedee, and Congaree rivers on the 5th and 6th, produced exceedingly rapid stream-flows at Camden, Cheraw, and Columbia on the 7th and 8th. At Camden, the danger line was reached during the early morning of the 7th, the highest gage reading attained, 30.2 feet, or 5.2 feet above danger line, being at the 8 a. m. observation of the 8th. The stream at Cheraw rose 27 feet during the night of the 6th and morning of the 7th. By the morning of the 9th it had reached a gage reading of 36.2 feet, or 9.2 feet above the danger line. The Congaree, at Columbia, rose 10.2 feet during the 7th and 8th, without reaching the danger line, and began to rapidly recede on the 9th.

The central Gulf hurricane of the 13-16th produced heavy precipitation of 4 to 6.50 inches over the northwestern section of this State, and the western and central portions of North Carolina, causing rises of 13.2 feet at Camden, 21.1 feet at Cheraw, and 10.1 feet at Columbia during the 14th, 15th, and 16th, the gage heights averaging 2 feet above the danger lines on the 16th, 17th, and 18th at the places mentioned.

Frequent, and at times heavy, local rains during the last decade in the extreme upper sections of this State and western North Carolina elevated the streams 8.1 feet at Camden on the 24th and 25th, and 5.9 feet at Cheraw and Columbia on the 28th and 29th. The Wateree, at Camden, remained at and slightly above the danger line on the 24th, 25th, and 26th. The Congaree reached the danger line on the 29th, after which it began to rapidly recede. The freshets on the upper Pedee of the 7th, 8th, and 9th, and the 14th, 15th, and 16th produced one general flood only upon the lower Pedee at Smith's Mills, from the 15th to the 28th, when the stream heights, at the latter point, varied from the danger line, 16 feet, to 17.6 feet, or 1.6 feet above the danger line. Almost the same conditions were observed upon the Santee as

upon the lower Pedee. The flood waters upon the Wateree and Congaree of the 6th to 18th reached the lower Santee at St. Stephens at 8 a. m., of the 23d, when the gage registered 12 feet, the point of danger, and remained at that point until 8 a. m., of the 28th. The streams were above the danger lines on the following dates: At Camden from the 7th to the 9th, 15th to 20th, and 24th to 26th. At Cheraw from the 7th to the 10th, and 15th to 18th. At Columbia from the 16th to the 19th, and on the 29th. At Smith's Mills from the 14th to the 29th, and at St. Stephens from the 24th to the 28th. There is no record of three floods having occurred in the streams of South Carolina, previously, during any single month since the establishment of the South Carolina river service in 1891. Timely warnings of the Wateree, Pedee, and Congaree floods were telegraphed from this office.

There was very much delay in the harvesting of rice on the lower Black, lower Pedee, lower Waccamaw, and lower Santee rivers during the entire month, on account of the freshet water being elevated higher than that in the submerged rice fields, and preventing the drainage of the fields themselves. In many cases rice was entirely spoiled for the want of dry fields in which to cut and stack it. Considerable delay upon the construction of the lock and dam at Granby, S. C., on the Congaree, 12 miles below Columbia, S. C., under the supervision of the U. S. Engineer Corps, was experienced throughout the month, owing to the numerous freshets. Heavy rains of the 14th, 15th, and 16th caused several washouts upon the railways in Greenville and Spartanburg counties, S. C., and in Hudson and Polk counties, N. C., delaying travel for one day. Several toll bridges, wooden structures, leading over Lynch River, in Florence County, S. C., were either washed away or loosened from their fastenings by the recent floods. Florence County has had very heavy expense this year in repairing bridges, roads, and causeways damaged by floods. Several of the bridges endangered are the most important in the county, since they are the most frequently used by citizens in going to and from the Court House at Florence.

Along the Coosa and Alabama rivers and their tributaries the stages reached were not unusual, yet, owing to their occurrence at a critical time when there was great danger to all crops in the lowlands, much unavoidable loss and damage occurred. All property, however, that could be carried to higher ground was saved through the very accurate and timely warnings that were issued by the Weather Bureau. The following description of this flood was prepared by Mr. I. G. Gardiner, Observer temporarily in charge of the United States Weather Bureau office at Montgomery, Ala.

The morning report of the 16th showed heavy rainfalls over the entire watershed, averaging considerably over an inch at Canton, Resaca, Rome, and Tallassee, and over two and one-half inches at Gadsden, Wetumpka, and Montgomery, with rain still falling at all Georgia stations. Warnings were immediately issued for rapid, but not dangerous rises, and a 20-foot stage was forecast for Montgomery; at the same time special 2 p. m. reports were called for. The latter showed a cessation of rainfall indicating no necessity for a special bulletin at that time. On the morning of the 17th Canton reported a fall of nearly one foot; other stations a rise of two to five feet. Additional rains occurred quite generally on the 17th and 18th, and on the morning of the 19th, with a secondary rise coming in the Etowah at Canton, warnings were issued to all interested points, and the danger line stage was forecast for Gadsden. The rainfall was very light on the morning of the 20th, and a fall of nearly two feet was reported in the Etowah; still, considering the volume of water then in the rivers, the danger line stage at Gadsden was adhered to, and the expected stage at Montgomery raised to slightly above 20 feet. On the morning of the 21st reports showed quite general though moderate rains, with another secondary rise of 2 feet at Canton, at which point it was still raining, and the previously estimated stages at Gadsden and Montgomery, danger line and slightly above 20 feet, respectively, were expected to be exceeded, and forecasts so made and disseminated. Additional heavy rains of about one and one-half inches occurred at Georgia stations on the 21st, and upon receipt of this information in the morning reports of the 22d a forecast of a 22-foot stage at Montgomery was made, wide dissemination of this information made, and farmers were notified to take every precautionary measure. Special reports at 2 p. m. warranted this office in raising the forecast stage at Montgomery to 23 feet, and the public was so advised; at the same time Lincoln, Ala., was advised of flood stages for that place during the succeeding two or three days. The rivers rose steadily and attained the following reported stages: Gadsden, 20 feet; Wetumpka, 26 feet; Montgomery, 23 feet.

In view of the prolonged and intermittent rainfall and the perplexing secondary rises setting in at critical stages lower down the river, it is thought that a more perfect forecast could not possibly have been made. Probably at no time in the previous history of the river service in this section was more perishable property jeopardized, and though the stages attained in the rivers were not very high, still the unavoidable damage to lowland crops was very heavy. When due considera-

tion is given to the very large area of river lowlands in corn and other crops, there is no exaggeration in placing the value of the property jeopardized at \$1,000,000. Numerous calls were made upon the local office, and our suggestions were closely followed. In one instance a farmer had embankments thrown up to guard against our 20-foot stage forecast for Montgomery, and thus saved about 75 acres of corn, only to lose about 1,000 bushels later by the 23-foot stage, which, although predicted several days in advance, could not be guarded against. In another instance a farmer lost about \$1,000 worth of truck, this damage, also, being unavoidable. In other cases, where lowland corn was sufficiently matured for forage, many acres devoted to this grain were cut and saved. At least \$25,000 damage was done by this freshet, which no warnings could have averted.

The local press was most accommodating in disseminating the information, and warmly complimented the Bureau upon the timeliness and value of the warnings.

The stages in the Black Warrior and lower Tombigbee rivers, while not quite reaching the danger lines, were, nevertheless, sufficiently high to excite some apprehension in the

minds of the farmers and planters along their banks, and, on the 17th, they were advised to remove stock and portable property to higher ground.

Nothing of special interest was reported from the rivers of the Pacific coast system. They continued their steady fall throughout the month.

The highest and lowest water, mean stage, and monthly range at 134 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport on the Red.—*H. C. Frankenfield, Forecast Official.*

## CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following summaries relating to the general weather and crop conditions are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau.

[Temperature is expressed in degrees Fahrenheit and precipitation in inches and hundredths.]

**Alabama.**—The mean temperature was 78.6°, or 1.0° below normal; the highest was 104°, at Decatur and Madison on the 3d, and the lowest, 54°, at Maple Grove and Scottsboro on the 1st. The average precipitation was 8.86, or 3.42 above normal; the greatest monthly amount, 16.75, occurred at Daphne, and the least, 3.30, at Evergreen.

The general rain period from the 11th to the 23d was very injurious to corn and cotton, particularly the excessive rainfalls on the 15-16th; streams overflowed and inundated large areas of lowlands, doing great and in many cases irreparable damage to corn and fodder, while the continuance of wet weather wrought much damage to cotton.—*I. G. Gardiner.*

**Arizona.**—The mean temperature was 82.8°, or 0.2° above normal; the highest was 119°, at Fort Mohave on the 28th, and the lowest, 44°, at Taylor on the 20th and at Flagstaff on the 21st. The average precipitation was 1.82, or 0.55 below normal; the greatest monthly amount, 7.97, occurred at Nogales, while none fell at Gila Bend and Sentinel.

Weather conditions throughout the month have been very favorable to plant growth and crop development. The ground having been thoroughly soaked from the rains that occurred from the 1st to the 18th of the month, together with canals running full, the outlook in the irrigated districts for good fall crops is very promising. In the lower valley of the Colorado citrus trees are heavily fruited and are of thrifty appearance. The range is in excellent condition.—*L. M. Dey, Jr.*

**Arkansas.**—The mean temperature was 80.5°, or 1.5° above normal; the highest was 109°, at Jonesboro and Newport on the 3d, and the lowest, 52°, at Arkadelphia on the 7th and at Pond on the 23d. The average precipitation was 2.95, or 0.25 below normal; the greatest monthly amount, 3.05, occurred at Lutherville, and the least, 0.58, at Fort Smith.

Temperatures were high and the rainfall was very unevenly distributed during the first week of the month. Cotton improved in most sections, but was small and was shedding badly in some localities. Early corn was a decided failure, but the late planted showed some slight improvement. The second and third weeks the weather was characterized by temperatures about normal and rain in most sections, but unevenly distributed. Cotton was fair to good in most sections, but continued to shed and was being further damaged by rust. Late corn improved generally. During the closing days of the month higher temperatures prevailed and the rainfall, while heavy in some localities, was below the normal and was unevenly distributed. Cotton continued in fair to good condition, but it was still shedding and being damaged by rust; it had begun to open prematurely during the last decade of the month and picking had commenced, but was not general. Early corn had proved a complete failure and had been cut for fodder; late planted showed some little improvement. Late planted potatoes did not do well on account of lack of moisture. Fruits generally were a failure in most sections, while in others peaches and apples were abundant, but the quality was poor.—*E. B. Richards.*

**California.**—The mean temperature was 75.6°, or about normal; the highest was 124°, at Salton on the 26th, and the lowest, 24°, at Bodie on the 21st. The average precipitation was 0.12, or 0.05 above normal;

the greatest monthly amount, 2.50, occurred at Mammoth Tank, while none fell at about half of the stations.

Favorable weather prevailed during the month, and crops matured rapidly. In some localities, however, the comparatively low temperature retarded the development of grapes and late deciduous fruits. Heavy crops of wheat and barley have been harvested and mostly thrashed. The labor troubles are seriously interfering with shipments of grain and fruit.—*G. H. Willson.*

**Colorado.**—The mean temperature was 68.2°, or 1.4° above normal; the highest was 105°, at Delta on the 2d, and the lowest, 30°, at Wagon Wheel Gap on the 13th and at Breckenridge on the 21st. The average precipitation was 2.29, or 0.75 above normal; the greatest monthly amount, 6.53, occurred at Yuma, and the least, 0.36, at Marshall Pass.

One of the wettest Augusts in thirteen years. Precipitation came too late to save a large acreage of upland field crops, but was of material benefit to late corn, potatoes, and the third crop of alfalfa. Ranges also made marked improvement and at the close of the month were generally green—an unfortunate condition unless warm, dry weather should prevail during September.—*F. H. Brandenburg.*

**Cuba.**—The mean temperature was 81.2°; the highest was 97°, at Batabano, Holguin, and Los Canos (Guantanamo), and the lowest, 60°, at Santa Clara. The average precipitation was 5.13; the greatest monthly amount, 11.54, occurred at Pinar del Rio, and the least, 0.87, at Holguin.

Rains were very heavy in eastern and southern Pinar del Rio, and light in northern Santiago de Cuba; elsewhere they were fairly uniform and seasonal. The temperature changes were slight; the average temperature was about normal. Cane made good growth, but in some localities received too much moisture. The frequent showers interfered with field work. In Pinar del Rio sowing of tobacco seed beds was impeded by heavy rains; in other tobacco sections fair progress was made with beds and preparation of tobacco land. Small crops suffered somewhat from excessive moisture, but in most districts they made good advancement.—*W. B. Stockman.*

**Florida.**—The mean temperature was 80.4°, or 1.0° below normal; the highest was 99°, at Middleburg on the 1st, Micanopy on the 29th, and Middleburg on the 31st, and the lowest, 64°, at DeFuniak Springs and Marianna on the 4th. The average precipitation was 10.58, or 3.09 above normal; the greatest monthly amount, 19.75, occurred at Earnestville, and the least, 4.01, at St. Augustine.

Although precipitation averaged decidedly above the normal, the distribution was far from satisfactory. It was somewhat local, as evidenced by the wide range in monthly totals. The month was generally favorable for corn, but cotton had many setbacks. Excessive rains caused rust and shedding and at the end of the month picking was retarded by frequent showers. Cane, cassava, citrus fruits, sweet potatoes, and minor crops did very well. During the latter part of the month there was much activity in preparing lands for fall vegetables. Some tomatoes and Irish potatoes were planted; strawberry plants pushed forward, and much work was accomplished setting pineapple slips. The tropical storm which moved inland near the middle gulf caused considerable damage to cotton and corn, as a result of high winds and heavy rains.—*A. J. Mitchell.*

**Georgia.**—The mean temperature was 78.2°, or 1.1° below normal; the highest was 98°, at Allentown and Lumpkin on the 10th, and the lowest, 55°, at Clayton on the 1st, and at Diamond and Ramsey on the 2d. The average precipitation was 9.92, or 4.28 above normal; the greatest monthly amount, 22.07, occurred at Clayton, and the least, 3.22, at Camak.